

# MEDICAL PHYSICS WORLD

Bulletin of the International Organization for Medical Physics

IOMP Home Page address: <http://www.iomp.org>

## 69 Adhering National Organizations 1999

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## President's Message

Dear Fellow IOMP Members:

### The International Council for Science

September, 1999 has seen the dawning of a new era in the recognition and support of Medical Physics and our "sister" profession Biomedical Engineering with the election of our Union, the International Union for Physical and Engineering Sciences in Medicine (IUPESM), into full membership of the International Council of Scientific Unions (ICSU), now known as the International Council for Science. I will not dwell on the benefits of such full membership, since these have been presented in previous issues of Medical Physics World (see, for example, MPW 15, Number 1, p.8, 1999), nor will I review the long history of our several earlier attempts at gaining this recognition, since these were also discussed previously by IUPESM President, Professor Keith Boddy in this same article, but what I would like to do here is offer my (and our) congratulations and thanks to those who have worked so hard over the past year-or-so to make this happen. First and foremost we should congratulate Professor Boddy. When he became IUPESM President in 1997 there was serious debate as to whether the IUPESM should be disbanded because it had not been able to achieve full membership in ICSU, which was one of the main reasons for its formation in 1980. President Boddy decided that he would make this the major challenge of his three years as President and immediately threw himself headlong into the task. Unfortunately, all his efforts came to nought in April, 1998, when the ICSU General Committee voted to deny our petition for "promotion" from Associate to Full Membership. Any normal individual would have given up at this point but, instead, Professor Boddy took this denial as an even greater challenge. He sought the support of the entire IUPESM Council to work together to plan one final concerted effort. Members of the Council organized a worldwide petition drive to convince voting members of the ICSU General Committee of the need to have the IUPESM as full-member colleagues. IUPESM Secretary General, Gary Fullerton, coordinated most of this drive, listing each of the voting members and who should contact them. After enormous effort we appeared to have gained enough support for another application, which was presented at the September, 1999 meeting of ICSU, where we were given unanimous approval to become Full Members. This is the first time in the history of ICSU that an Associate Member has been "promoted" to Full Membership. Congratulations to Keith Boddy and Gary Fullerton and all those who supported them in this successful drive.

### Recognition of "Medical Physicist"

When Professor Boddy became President of the IOMP in 1994, a major objective in his Action Plan was to have "Medical Physicist" recognized as an occupation by the International Labour Organization in their International Classification of Occupations (ISCO). He made several important contacts at the ILO but very little headway. Apparently this was not going to be an easy task. We have continued to petition the ILO on this issue, however, and I can now report that we have some good news and some bad. The good news is that the ILO is certainly taking us seriously, as

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## Secretary General's Message

Dear IOMP Members,

### **ICSU - The International Council for Science**

After nearly 20 years of effort the IOMP and sister biomedical engineering organization, IFMBE, have succeeded in achieving the goals set for us by the vision of our founding officers nearly four decades ago. The IUPESM (union of IOMP and IFMBE) was accepted unanimously as the 26<sup>th</sup> International Union Member of ICSU at the ICSU General Assembly meeting in Cairo, Egypt on September 29, 1999. The magnitude and importance of this step forward will only be recognized in the 21<sup>st</sup> century. It is the first step in raising the recognition and prestige of our specialty of science to the level of that of physics, chemistry, geophysics and biophysics. The election opens the doors for further developments that can only occur with international cooperation through the projects of UNESCO, WHO and the United Nations. All of us owe IOMP Past President and IUEPSM President, Professor Keith Boddy, a great debt for his unerring aim and persistence in achieving this goal. I hope you will take the time to thank him personally at the World Congress in Chicago next July.

The next step in making full member status in ICSU productive for IOMP members is to identify IUPESM consensus issues. What concerns for technologies for improved human health and quality of life that can be put forward by IUPESM at the next ICSU General Assembly meeting? The ICSU meeting is scheduled for July 2001 in Rio de Janeiro, Brazil. The Chicago2000 World Congress will be the venue for these debates and I hope that you and your National Society will be present to make your voice heard. It is important for you to know that IUPESM is the first union representing scientists working in health care delivery systems. IUPESM has an important role to fill and bears the responsibility of representing our members in a responsible and productive manner — as in meeting new colleagues, the first impressions are important for the future.

### **Reorganization of IOMP for an Internet World**

Use of electronic communications using e-mail and the use of home pages on the Internet is rapidly changing the way IOMP operates and interacts on an international basis. It is now possible to hold regular meetings of committees using e-mail and personal group distribution of discussions. This opens a wider range of activities and provides for more active levels of communication. The IOMP Executive Committee has been restructuring IOMP to use these new tools and to involve more extensive international selection of committee members from all regions of the world. In the spring of 2000, I will be sending you proposals for the first major update of the IOMP By-Laws since 1988. These changes will require the careful attention of delegates from all member nations. The Chicago2000 meeting will have important new ground to break and delegates must be prepared to work ahead of time if we are to complete our work in Chicago.

In a related matter I wish to inform everyone that only those organizations that are in good standing will be qualified to participate and vote on the proposed By-Laws changes. I urge all delegates and officers of National Member Societies to assure that dues and necessary reports have been submitted to the Office of the Secretary General. Information concerning the status of all members is available on

*(continued on page 4)*

# STANDARD ONE OF TWO HALF PAGES (5&19)

## Secretary General's Message

*(continued from page 2)*

the listing of National Members on the IOMP home page, <http://www.iomp.org>. Those not having access to the Internet should write to me directly at the address: Gary D. Fullerton, Secretary General IOMP, University of Texas HSCSA, San Antonio, Texas, USA, 78284.

### Regional Focus

One of the major programmatic changes recently adopted by the Executive Committee is to refocus Science, Education and Training and Professional program support on a regional basis. As you will find by going to the IOMP web page, IOMP funding of programs is striving to promote regional cooperation on problems key to the success of our national members. In this context it is assumed that the solutions to such problems have a regional bias that depends on the educational, cultural and professional history of the region. The intent of this process is to promote greater interchange and cooperation between IOMP National Members from a specific region. In support of this concept the IOMP Council in Chicago will discuss and decide on formation of an International Advisory Council with representation from Regional Chapters such as EFOMP, ALFIM and other regional Chapters that are presently being proposed in Asia, Oceania and North America.

### World Congress2000

On October 14, 1999 the Chicago2000 Organizing Committee met to resolve outstanding problems concerning preparations for the World Congress on Medical Physics and Biomedical Engineering, Navy Pier, Chicago, July 22-28, 2000. I participated in this meeting as Chairman of the Publicity Committee and am pleased to report that all aspects of preparations are proceeding on or ahead of schedule. The focus of the Committee on uses of the Internet and electronic communications has been tested and is ready to go. By the time you receive this message the registration and abstract submission software will have been available at the Web site since November 1, 1999. Please make sure to visit the World Congress home page on a regular basis to receive updated information at the address: <http://www.wc2000.org>. To make it easy to find updated information please look under the category, "What's New" at the top of the page.

In summary, 1997 and 1998 have been exciting and challenging years. The rate of change in IOMP activities is quickening and promises to accelerate even further in the next century. It is important that as many of you as possible are present in Chicago to help create the next three-year plan

*Gary D. Fullerton,  
IOMP Secretary General*

## Vice-President Report

The first six months of this year have witnessed quite a vivid activity on the part of all officers of the IOMP. Personally, I have had the honor and pleasure of attending two important international meetings: one in Tallinn (Estonia), and the other in Budapest (Hungary). The details of these two meetings are given in separate reports. It was especially the meeting in Tallinn that is worth mentioning since it covered a wide number of subjects both in medical physics and biomedical engineering and was very well organized. Although Estonia is not a very big country (1.5 million population) its potential seems to be quite extraordinary. As for the Budapest meeting it was nice to see 2,500 scientists and/or scientific administrators toiling over hundreds of recommendations that may or may not be of relevance to the scientific community the world over.

In addition, I have made an inquiry among the recipients of the "Bulletin of Medical Physics & Biomedical Engineering" about the access that they have to Internet as I am planning to switch over to electronic publication in the future. Out of 250 Questionnaires sent out I have received only 15 responses so far...

*Oskar A. Chomicki,  
Vice President, IOMP*

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## IOMP/AAPM Libraries Report

We currently have 81 active libraries in 48 countries. No new libraries have been established in the past six months. During the first nine months of 1999 we initiated 17 donations to 15 different libraries. In addition, most libraries are receiving donated ongoing subscriptions to Medical Physics and IOPP publications. Because of large donations recently received, the libraries program is turning down donors needing postage reimbursement until additional funds are made available. The donations have been very beneficial to the recipient libraries, but have exhausted the money set aside by IOMP for postage for the year. We will continue to coordinate donations for donors able to pay the postage.

We continue to work with Brenda Trigg at IOPP to coordinate donations of books to new and existing libraries. We communicate regularly with AAPM to keep Medical Physics Journal subscriptions current for libraries. We have been contacted by the Society for Radiological Protection about donated copies of their Quarterly Journal of Radiological Protection. They would like to include the libraries in their regular mailings.

Our new policy to make contact with each library at least annually has been very successful. We have collected new information about the libraries' needs and have been able to update mailing information. We put donations to non-responding libraries temporarily on hold until we find out why our mail is not getting through.

We provided a list of active libraries and countries currently served to Gary Fullerton to update the IOMP website.

Anyone wishing to donate materials or establish a library is asked to contact the curator.

*Marilyn Stovall, Ph.D.  
Curator of the IOMP/AAPM Libraries*

## Letter from the President of IUPESM

Dear Fellow Member of IUPESM,

On 29 September 1999, IUPESM was admitted as a Full Member of the International Council for Science (ICSU). At the ICSU General Assembly in Cairo, the vote for admission resulted in unanimous approval.

My preceding letter likened these Presidential Letters to a soap opera or serial. In the previous episode, ICSU's Standing Committee on Membership, Structure and Statutes (SCMSS) was about to consider our new application for Full Membership at its meeting in April 1999, during which your President and President Elect presented our submission.

The SCMSS, with the advice and support of the Executive Committee, approved our application for consideration by the General Assembly. It was then necessary for ICSU to receive Letters of Support from at least 12 Union Members (a minimum of three from National Union Members, such as National Academies, and at least three from International Scientific Unions), to proceed to the ultimate ballot of all Full Members in Cairo.

IUPESM contacted every Union by mail and many on a personal basis to underline the case for our admission. Significantly more than the required number of Letters of Support were received by ICSU.

The unanimous vote in Cairo is not only a tribute to the symbiotic benefits of our Full Membership for ICSU and IUPESM but also the persuasion of Council Members, particularly our Secretary General. My efforts as Leader of the Expedition to this achieve this long sought summit would have been in vain without their excellent support and I wish to record again my personal thanks to them as well as on your behalf.

So this episode of the real life drama has had a very happy and successful conclusion. But where does the story go from here?

Now the real work begins in ensuring that IUPESM is an effective and influential partner within ICSU. Even before the ballot in Cairo, I had received letters from the Presidents of ICSU's Committee on Science and Technology in Developing Countries, its Programme on Capacity Building in Science and its International Network for the Availability of Scientific Publications welcoming collaboration with IUPESM.

We are now in a position, within the immense stature of the International Council for Science, to make major contributions to the exploitation of the Physical and Engineering Sciences in Medicine for the benefit of patients and people with disabilities worldwide and especially in Developing Countries. To do so is a major challenge in which we must succeed.

Congratulations! You are now a member of an organization, IUPESM, which is a Full Member of ICSU. I and your Council committed ourselves to seeking this status at the Nice World Congress as well as implementing Key Programmes on most of which good progress is being made. We now have new mountains to climb from our present summit and the Millennium Congress in Chicago will provide an excellent opportunity to confirm our goals and chart our paths into the next century. We will need your wholehearted help and support to achieve greater and meaningful heights.

Together, we will write the script of following episodes of this real life drama for the new millennium.

*Keith Boddy, CBE, DSC, FRSE  
President, IUPESM*

# Report from AAPM International Scientific Exchange Programs

## Course/Workshop in Brazil • June 2-5, 1999

The 8th AAP/IOMP Course/Workshop\* in Radiation Therapy Physics was held successfully in S. Paulo, Brazil, June 2-5, 1999. The Course/Workshop was sponsored by the New York Chapter of the AAPM (RAMPS), AAPM International Scientific Exchange Programs (ISEP) and was endorsed by International Organization for Medical Physics (IOMP) Education and Training Committee -with no financial support. The objectives of this course/workshop were to exchange information concerning medical physics profession and to present advanced radiation therapy physics to clinical physicists in Brazil and others Latin American countries.

This Course/Workshop was offered in collaboration with the Medical Physics Society of Brazil Chief Physicist of the Hospital Israelita Albert Einstein in S. Paulo. The course content was based on their need and interest. The six AAPM faculties (Drs. Chen-Shou Chi, Doracy Pontenla, Clifton Ling, Wendell Lutz, Yakov Pipman, and Marco Zaider) were selected and supported by RAMPS, the NY Chapter of the AAPM and local organizers. Varian Associates in N.Y. supported the travel expenses of Amparo Marles, a faculty from Chile. We are grateful to RAMPS and Varian for their generous contributions. There were 173 attendees, 26 speakers and chair-

persons, 3 companies, a total of 201 registrants. The participants were from Brazil (199), Argentina (6), Chile (5), Columbia (5), Israel (1), Mexico (1), Peru (1), and USA (6 speakers). Certificates of Participation and Certificates of Appreciation were presented to the participants and faculty. Drs. Geoffrey Ibbott, AAPM President, Azam Niroomand-Rad, AAPM ISEP and IOMP ECT Chair, Colin Orton, IOMP President, and Host Director signed these certificates. Several set of AAPM publications {Monograph 16, Proceeding 3, Report 21, 38, 41, 42, and 44}+10 volumes of the book: Linac Radiosurgery - A practical Guide were donated to the medical physics libraries in Brazil, Chile, Columbia, and Argentina.

We also wish to acknowledge the commitment and effort of Dr. Jose Carlos da Cruz and his staff for organizing and hosting this Program in Brazil. We would like to thank the faculty for volunteering their time and effort in this endeavor.

*\* Pakistan (1992), Poland (1993), Iran (1994), Turkey (1995), Morocco (1996), Russia (1997), Egypt (1998).*

*Doracy Pontenla, Ph.D.  
Co-Director, AAPM ISEP  
Azam Niroomand-Rad, Ph.D.  
Chair, AAPM ISEP*

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# Report from AAPM International Scientific Exchange Programs

## Course/Workshop in Romania • June 10-14, 1999

The 9th AAP/IOMP Course/Workshop\* in Radiation Therapy Physics was held successfully in Napocaa, Romania, June 10-14, 1999. The Course/Workshop was cosponsored by the AAPM International Scientific Exchange Programs (ISEP) and International Organization for Medical Physics (IOMP) Education and Training Committee. The objectives of this course/workshop were to exchange information concerning medical physics profession and to present advanced radiation therapy physics to clinical physicists in Romania and others Central and Eastern European countries.

The Course/Workshop was offered in collaboration with the Romanian Medical Physicists' Association, Romanian Society of Oncological Radiotherapy, Oncological Institute I. Kiricuta and Babes-Bolyai University, Physics Faculty, in Cluj-Napoca, Romania. Professor Emil Burzo, Dean of Physics Faculty and Professor Ghilezan, General Manager at I.Kiricuta Oncological Institute were the Host Director and Mr. Stefan Both (Director of Medical Physics at Oncological Institute Cluj), was Host Director and Organizer of this Course/Workshop. The AAPM/IOMP Course Directors were Dr. Azam Niroomand-Rad and Dr. Rodica Alecu. The AAPM faculty were Dr. Rodica Alecu, Dr. Faiz Khan, Dr. Colin Orton, Dr. Bhudatt Paliwal, Dr. James Purdy and Dr. Ted Thorson. About 120 medical physicists and radiation oncologists from Romania, Hungary, Macedonia, Poland, Czech Republic, Canada and England attended this Course/Workshop. Thirty percent of them were radiation oncologists. The local organizer offered grants for attendees. Their total value was \$700.

A total of 21 Khan's books, with author's discount, and few AAPM reports and monograph were also donated to the major radia-

tion therapy centers in Romania and the others European countries. Certificates of Participation and Certificates of Appreciation were presented to the participants and faculty. Drs. Geoffrey Ibbott, AAPM President, Azam Niroomand-Rad, AAPM ISEP and IOMP ECT Chair, Colin Orton, IOMP President and Niclae Ghilezan, Host Director signed the certificates.

The local expenses of the faculty were supported by the local organizer institutions and their travel expenses were financed by funds provided by the AAPM, IOMP, and vendors. Corporate Sponsors (+1,000) were Canberra-Packard, Computerized Medical System (CMS), Elekta Oncology, Med-Tec Inc., Medical Physics Foundation, Sun Nuclear, Thestronics, and Varian Oncology Systems. Sponsors were offered a tabletop space for exhibition of their products in a room adjacent to the lecture hall. In addition they had the opportunity to be actively involved in Treatment Planning Workshop. We are grateful to these organizations and companies for their generous contributions. We also wish to acknowledge the commitment and effort of Mr. Stefan Both and his staff for organizing this Summer School in Romania. We would like to thank the AAPM faculty for volunteering their time and effort in this endeavor.

*\* Pakistan (1992), Poland (1993), Iran (1994), Turkey (1995), Morocco (1996), Russia (1997), Egypt (1998), Brazil (1999).*

*Rodica Alecu, Ph.D.  
Co-Director, AAPM/IOMP Course/Workshop  
Consultant, AAPM ISEP*

*Azam Niroomand-Rad, Ph.D.  
Co-Director, AAPM/IOMP Course/Workshop Chair, AAPM ISEP*

## Treasurer's Report

Due to illness Dr. Ann Dixon-Brown was forced to retire from IOMP Treasurer duties as of January 1, 1999. The Secretary General moved Treasurer functions to his office at that time. Treasurer Brown transferred \$49,075 from the UK account to the San Antonio Headquarters, which yielded a 1998-year end account balance of \$54,726.14 when added to the American account for IOMP. The income for 1999 to the beginning of November was \$20,980.97 while expenses were \$15,841.90 for the same period to give a balance of \$59,865.21 on October 29, 1999. Both income and expenses were significantly less than predicted in the 1999 budget. The lower than expected income is due to receipt of only 17 (Australia, Canada, Cyprus, Denmark, Estonia, Georgia, New Zealand, Panama, Romania, Republic of Moldova, Romania, Sri Lanka, South Africa, Tanzania, Thailand, United States of America and Zimbabwe) of 69 IOMP National Membership dues. Thus only a fraction of IOMP members are in good standing at the time of this report.

Officers of national medical physics organizations are encouraged to resolve the status of their society as soon as possible. It is very important that questions concerning the status of National Members be resolved prior to the World Congress as members of Societies that have not paid their due do not qualify for the discounted registration fees. In addition the delegates for such countries do not qualify to vote at the IOMP Council meeting nor do their members qualify for IOMP sponsored grants of aid.

Societies from developing nations wishing to request waiver of national dues in favor of internally sponsored programs are reminded that they must request such a waiver on an annual basis. Detail concerning the status of all national members is available on the National Members page of the IOMP home page.

Gary D. Fullerton, Ph.D.  
Secretary General/Treasurer IOMP

## Course/Workshop on "Radiation Therapy Physics"

May 29-June 2, 2000 • Bangkok, Thailand

Faculty of Medicine, Chulalongkorn University, Medical Physics Club of Thailand and Society of Radiation Oncology of Thailand will host a workshop on Radiation Therapy Physics for 5 days (29 May - 2 June, 2000) in Bangkok, The City of Angels, Thailand. This workshop is sponsored by IOMP/AAPM. Various topics on radiation therapy physics will be lectured by World Well-known Physicists. Intercomparison study on calibration chamber/electrometer for photon and electron beam measurement. If you would like to participate in this workshop and visit Thailand in the 'Amazing Thailand Year', please contact me:

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e-mail: kanchali@chula.ac.th

## Calendar of Events

**5-10 March 2000: European Congress of Radiology**, Vienna, Austria. (ECR Office, Neutorgasse 9/2A, A-1010 Vienna Austria, [Tel: (+ + 43/1) 533 40 64; Fax: (+ + 43/1) 533 40 649; E-mail: office@ecr.org URL: www.wcr.org]).

**22-25 May 2000: 13th International Conference on the Use of Computers in Radiation Therapy (ICCR)**; Heidelberg, Germany. Karin Beinert: Tel +49-6221-42-2551; Fax +49-6221-42-2561; e-mail: iccr@dkfz-heidelberg.de; URL: www.dkfz-heidelberg.de/iccr/

**27-29 May 2000: Second Beijing International Congress on Medical Radiation Physics**; Beijing, China. Raymond K. Wu, Eastern Virginia Medical School, Radiation Oncology Department, 600 Gresham Dr., Norfolk, VA 23507; Tel +01 757-395-8610, e-mail: RayKWu@aol.com; URL: members@aol.com/AAPMasia

**8-9 June 2000: International Workshop on IMRT in Clinical Practice**; Brussels, Belgium. Dirk Verellen; Dept Radiation Therapy AZ-VUB; Laarbeeklaan 101, B-1090 Brussels; e-mail: conrvnd@az.vub.ac.be; URL: pc93.roc.wayne.edu/imrt2K

**11-14 June 2000: Fifth International Workshop on Digital Mammography (IWDM-2000)**; Toronto, Canada. Martin Yaffe, Departments of Medical Biophysics and Medical Imaging, University of Toronto, Rm. S6-57 Research Bldg., 2075 Bayview Avenue, Toronto M4N 3M5, Canada; Tel (416) 480-5715; fax (416) 480-5714; e-mail: iwdm2000@srcl.sunnybrook.on.ca; URL: www.sunnybrook.on.ca/~iwdm2000/

**23-28 July 2000: World Congress on Medical Physics and Biomedical Engineering**, Chicago, IL, USA. WC2000. Secretariat: Gary D. Fullerton, UTHSC Radiology Dept., San Antonio, TX 782847800, USA Tel: + 01 210-567-5550; Fax: + 01 210-567-5549, E-mail fullerton@uthscsa.edu

**4-8 September 2000: ICR-2000: 21st International Congress of Radiology**; Buenos Aires, Argentina. Congress Secretariat, Tecuman 2075, (1050) Buenos Aires, Argentina; Fax: (54-1) 374 6487/4651/4952; e-mail: info@icr2000.org

**24-29 August 2003: World Congress on Medical Physics and Biomedical Engineering (WC2003)**, Sydney, Australia (Gary D Fullerton, UTHSC Radiology Dept., San Antonio, TX 78284-7800, USA, Tel: + 01 210-567-5550; Fax: +01 210-567-5549; E-mail: fullerton@uthscsa.edu

## International Scientific Exchange Programs

The Physics of Radiation Therapy  
Chulalongkorn University • Bangkok, Thailand – May 29 - June 2, 2000

### Sponsoring Organizations

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in Medicine  
International Organization of  
Medical Physics  
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Society of Radiation Oncology of  
Thailand

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## President's Message

(continued from page one)

demonstrated by the following excerpt from the Minutes of the ILO Bureau of Statistics meeting last October (1998): "Proposals for updating and extending the ISCO classification structure...may happen at the initiative of international federations of organizations of people working in particular professions who can make a case for the separate identification of these professions in ISCO as being important for the international recognition of *such occupations* (one example is 2111-11 Medical Physicist). " I have perused all the Minutes carefully and find that "Medical Physicist" is the only "new" profession that they mention by name. Clearly, the ILO are looking to us as prime candidates for specific classification in the next revision of ISCO. The bad news is that this is going to be a long drawn-out process. The first step will be the establishment of a special web site to collect relevant information and receive proposals for modifications and updates of ISCO over the Internet. There will be facilities for questions, comments and suggestions, as well as providing information about national practices. We will keep IOMP members informed when this web site is activated, probably by the end of 1999, so that we can all make a concerted effort to inform the ILO of the importance of a separate classification for "Medical Physicist". The results will be presented at the 2003 meeting of the International Conference of Labour Statisticians (ICLS), where it may be proposed that a revised and extended version of ISCO be prepared for approval at the 2008 ICLS. This is the earliest that we can expect action on our proposal since the Agenda for the 2003 ICLS is already established. We have a very long way to go, but now there is at least "light at the end of the tunnel".

### World Congress 2000

As our next World Congress approaches, I extend to all of you an invitation to come to Chicago to celebrate the New Millennium with your colleagues from around the globe. The major thrust of *Chicago 2000* is "the creation of communication links and networking to solve world-wide problems", and I can think of no better excuse for our members to gather together at what will undoubtedly be the biggest (and best!) meeting of medical physicists in history. The Chicago 2000 Organizing Committee has arranged a superb program of scientific, professional, and social events. We are in for an experience of a lifetime. See you in Chicago.

#### ANNOUNCEMENT:

**The Nominating Committee is still seeking suggestions for candidates for Vice President and Secretary General for election by the IOMP Council at the Chicago World Congress. Please send you suggestions, preferably with the endorsement of your national society, to Nominating Committee Chairman Colin Orton (address on page 2) as soon as possible.**

Colin G. Orton,  
IOMP President

## Electronic Medical Physics World (EMPW)

The Electronic Medical Physics World (EMPW) was established in 1997 to compliment Medical Physics World (MPW). The Home Page for EMPW can be found on the Internet at <http://www.medphysics.wisc.edu/nempw>. It has been reasonably popular with over 6,000 visitors a year. The current staff of EMPW are: Kwan Hoong Ng, Assoc. Prof. at the University of Malaya in Malaysia ([dwlug@tm.net.my](mailto:dwlug@tm.net.my)) Editor; John Cameron, Prof. Emeritus at the University of Wisconsin-Madison ([jrcamero@facstaff.wisc.edu](mailto:jrcamero@facstaff.wisc.edu)) Editor of the "Ask Your Medical Physicist" Page. Larry DeWerd, Prof. at the University of Wisconsin-Madison, ([ladewerd@facstaff.wisc.edu](mailto:ladewerd@facstaff.wisc.edu)) Managing Editor and supervisor of the student employee who maintains the Home Page on one of the University of Wisconsin large computers. The Home Page currently operates without any funding from the IOMP. It uses funds donated to the University of Wisconsin for its operation.

EMPW has 'Useful Links' to the Home Pages of many medical and radiation related international societies, various national medical physics societies, information resources and organizations related to medical physics.

The Ask Your Medical Physicist service is an active part of EMPW. On the average we receive about 30 questions a month. Technical questions are forwarded to a medical physicist expert in the area of the question. We thank those who have helped in answering these technical questions

Technical questions and answers (Q & A) of educational value are kept in a Q & A file found from the Home Page. Many nontechnical questions come from nonscientists concerned about risks from medical radiation exposures. These are generally answered by the editor of the service.

Prof. Azam Niroomand-Rad, Editor of MPW serves as liaison between EMPW and MPW. Ajay Kapur ([kapur@reyes.stanford.edu](mailto:kapur@reyes.stanford.edu)) is the editor of the 'Medical Physics Graduate Students' page. This provides a forum for communication and collaboration among the graduate students worldwide.

Many countries (or geographical areas) have "Country Editors" on EMPW. Please refer to EMPW for the current list. We encourage officers of IOMP affiliated national societies not currently represented to send us their nominees. The web site is intended to supplement the Home Page for the International Organization for Medical Physics (IOMP) located at <http://www.iomp.org>

Please forward suggestions for improvement of EMPW to me or one of the other editors. We are especially interested in hearing from you if you are willing to contribute to EMPW.

John Cameron, Ph.D.  
Professor Emeritus,  
University of Wisconsin

# Medical Physics in Canada

Canada has a population of 30 million and covers an area of almost 10 million sq km. The low population density poses special problems not only in the delivery of health care but also in the creation of a national medical physics community. These difficulties are further compounded by the fact that health care is a responsibility of the ten provinces and three territories. Federal (national) standards do apply in certain areas, licencing of radiation facilities being one. However, salaries, conditions of employment and the emphasis on the various components of the health care systems do vary from province to province. With few exceptions, medical care is provided through a socialized medicine system. Certainly, all radiotherapy and most diagnostic examinations are available only in institutions funded by provincial Ministries of Health. Thus most medical physicists are government employees whether in clinical or university posts.

Approximately 80% of Canadian medical physicists work in health care institutions with about 20% deriving their primary income from university positions. Of the medical physicists with direct clinical responsibilities, 60% are employed in one of the 28 Cancer institutions across the country. The remainder are engaged in some aspect of medical imaging and/or radiation safety. In 1998 there were 102 students working towards higher degrees in medical physics. Most of these were pursuing research in imaging topics although most of the jobs are currently in therapy. That division in the workforce is likely to continue and probably will become more accentuated. Details on who does what in Canadian medical physics and for how much can be found in the results of the annual person power survey published in the Canadian medical physics newsletter -Interactions- edited by and available from Peter Munro (pmunro@lrcc.on.ca). For those interested in staffing levels in radiotherapy, including medical physics, the best source is a recent article by Ervin Podgorsak published in *Current Oncology* (1998,5,208-216).

Two organizations represent medical physicists in Canada. The Canadian College of Physicists in Medicine (CCPM), established in 1979, has as its primary function the certification of physicists engaged in clinical medicine. The principal objective of the Canadian Organization of Medical Physicists (COMP), which developed out of a division of the Canadian As-

sociation of Physicists, is to promote and encourage the development of scientific knowledge toward the applications of physics to medicine. These two organizations are very closely related with almost all members of the CCPM being also members of COMP. With a relatively small community of medical physicists in Canada it is clearly important not to duplicate activities. Several committees which represent the interests of members of both organizations are now sponsored jointly. These are: Finance - dues are collected through a central Secretariat and allocated to initiatives of either or both organizations according to priorities determined jointly; Professional Affairs - issues involving professional status and related topics concerning the medical physics community at large as well as the certifying organization (CCPM) are dealt with by this group; Radiation Regulations - medical physicists are frequently invited to comment on proposed new or existing regulations and these responses are handled jointly. This joint committee structure is a relatively new innovation but it seems to working well in the Canadian context. The organizations jointly sponsor a website ([www.medphys.ca](http://www.medphys.ca)) where a wide range of information on medical physics in Canada may be found.

The Canadian Organization of Medical Physicists, with 430 members, is primarily responsible for the annual national meeting which lasts for two and a half days. The meeting is held in a different location each year to facilitate attendance by medical physicists across the country. This year the meeting was held in Sherbrooke, Quebec, a couple of hours east of Montreal. It is not uncommon to hold the national meeting in conjunction with other organizations. In Sherbrooke, the meeting was organized jointly with the Quebec society of medical physicists and biomedical engineers. Next year we will meet at the World Congress to be held in Chicago. Typically there are 250 registrants at the annual meeting which, considering the distances many have to travel, is a large attendance. Proffered papers are preceded by a symposium on a relevant topic often followed by a workshop. To accommodate the large number of submissions an extensive poster session is also organized. Abstracts of both oral and poster presentations are published in *Medical Physics* in the middle of the year.

The Canadian College of Physicists in Medicine devotes most of its effort to

running a certification program for Canadian medical physicists. There are two levels of certification. Membership requires success at a five hour written examination with three quarters of the marks allocated to questions in the candidate's declared subspecialty, for example radiation oncology physics. The remaining 25% are allocated to a general medical physics section which all candidates are required to attempt. The pass rate over the last few years has been typically 50-75% and there are currently 68 members of the CCPM. Eligibility for Fellowship in the College requires Membership plus at least seven years of clinical experience and satisfactory references. Fellowship is awarded following a successful oral examination on a topic chosen by the candidate and general areas of medical physics. The examination committee typically comprises the 8 person Board of the College with additional expertise brought in as necessary. There are currently 87 Fellows of the College. Certification by the College is recognized by both the AAPM and the ACR in their definitions of a qualified medical physicist. In Canada, certification is recognized by the Atomic Energy Control Board, our national licensing authority and by some provinces. Regrettably, it is probably true to say that certification by the College is more widely recognized outside Canadian borders than within.

The challenges faced by the Canadian medical physics community are several and probably not that different from those faced by medical physicists around the world. We are committed to maintaining the highest standards of medical physics both in clinical practice and in academic endeavors. In the context of the former, our certification processes are the cornerstone. These are revised on a regular basis and recognition by professional organizations in other jurisdictions is essential to confirm that we are, indeed, functioning at an international level. Probably the key activity in promoting academic standards is our annual scientific meeting where clinical, academic and student medical physicists are encouraged to share the results of their efforts. Increasingly we are forming and strengthening liaisons with related organizations within Canada and beyond its borders. Mutual recognition and collaboration can only enhance the service provided by medical physicists to patients and emphasize the importance of the role played by medical physicists in developing and introducing new techniques in medicine.

*Peter Dunscombe, Past President,  
Canadian College of Physicists in Medicine  
Mike Patterson, Chair,  
Canadian Organization of Medical Physicists*

# World Conference on Science

**26 June - 1 July 1999, Budapest, Hungary**

The Conference was organized by UNESCO and ICSU (The International Council of Scientific Unions). ICSU's membership comprises 95 multidisciplinary national bodies, scientific research councils or national science academies and 25 International Scientific Unions. It is the world's most prestigious international scientific organization, and, therefore, for the past several years IUPESM has been trying to achieve the status of a full membership, although it has already been among the 28 Scientific Associates. The organizers have invited two representatives from IUPESM to attend the Conference. Mostly due to geographical reasons these representatives were: Mr. Nandor Richter of Hungary, Founding Member of the World Academy of Biomedical Technology ( a UNESCO based organization) and Past Vice-President of IUPESM (1988-1991), and Oskar A. Chomicki of Poland, Vice-President of IOMP.

The Conference was attended by over 2,500 participants from all over the world (delegations from 142 countries numbered between 1 to 30 persons). The main topics of the Conference, called Forums, were: (1) Science: Achievements, Shortcomings and Challenges, (2) Science and Society, and (3) Towards a New Commitment.

For the IUPESM representatives the most important meeting was that of the Non-governmental Organizations Consultation held on June 27-28. One of IUPESM representatives (Oskar Chomicki ) was allowed 15 minutes to present the structure and activities of the IUPESM before a group of some 30 delegates of 29 NGO organizations, and both IUPESM representatives submitted a new paragraph to the NGO recommendations, which was subsequently edited by NGO reporters, and in the version given below was included in a set of six draft recommendations presented by the NGO to the General Meeting:

*“Health related sciences are of the greatest importance as a response to human needs. A balanced development and application of these sciences, to be inclusive of all groups, are key factors in health improvement the world over. Emphasis should be put on preventive health technologies with particular reference to the existing needs. Governments and international organizations should increasingly rely upon the experience in this field of the relevant international scientific organizations and relevant NGO.”*

It can easily be seen that two vital points in the IUPESM paragraph were, unfortunately, omitted, namely those of “*medical physics and biomedical engineering*” and “*such as IUPESM*”. Nevertheless, although the final draft version of the “DECLARATION ON SCIENCE AND THE USE OF SCIENTIFIC KNOWLEDGE”, the most important document issued at the Conference, did not retain the above formulation it had one sentence in the Preamble, which vaguely resembled the suggestion made by the IUPESM representatives. It read: “*We seek collaboration across all the fields of scientific endeavour, i.e. the natural sciences such as the physical, earth and biological sciences, the biomedical and engineering sciences...*”

What should be emphasized is that the Conference in its *toto* did not concern itself much with big-medicine, and, for

example, apart from the above few words, the Declaration did not mention any medical problems at all. Just to show the atmosphere and the philosophy of the conference we include a few sentences from the opening speech of Prof. Arber, President of ICSU:

*“The represented disciplines englobe all of natural sciences and range from mathematics and astronomy to specialized fields of the life sciences and include of course physics, chemistry and the earth sciences. Please note that this roughly corresponds to the definition given to science in the context of our World Conference on Science. Most of what is commonly understood under humanities, social sciences, clinical medicine and engineering is thus not part of our debate on science per se, although some important segment of these fields of knowledge are essential in the evaluation of the impact of science and its application on society”.*

The organizers and participants, since they wanted to gain respect for science, and/or make it more popular in their respective societies, especially in the Developing Countries, and wanted to introduce science into the 21st century in all countries the world over, were mostly interested in general problems concerning humankind such as poverty (with suggestions by the representatives of some African countries that part of their debts be transformed into financial assistance for research), or the historical imbalance in the participation of men and women in all science-related activities, or ethics in scientific endeavour.

Among the most important 28 conclusions drawn and adopted were those which proclaimed the importance of (1) Science for knowledge; knowledge for progress, (2) Science for peace, (3) Science for development, and (4) Science in society and science for society. Several dozen researchers and scientific organizers spent several dozen hours on formulating these points in detail with the aim of presenting them to the respective governmental bodies and NGO organizations for implementation.

The general feeling was that in practice the World Conference on Science would not be able to change dramatically the world's current situation in science, especially in the emerging and developing countries, mostly because of the widespread shortage in financial resources which, as everybody pointed out, are absolutely indispensable for research and scientific education

The IUPESM representatives tried their best and they have developed contacts with some representatives from countries like Latvia, Lithuania, Ukraine, and Tadiikistan, and WHO and CIOMS.

The fact that some mention was made of health-related sciences in the final draft Declaration of the Conference may serve as an indirect indication of the recognized importance of the IUPESM by the organizers, which, in its turn, may hopefully be used in future contacts world wide.

*Oshar A. Chomicki  
Vice President, IOMP*

# Sacred to the Memory of Dr. G. Zakharchenko

Dr. G. Zakharchenko, the well-known specialist in the field of clinical dosimetry of the Republic of Moldova, died on the 28<sup>th</sup> of August, 1999, at the age of fifty-six.

Dr. G. Zakharchenko was born on the 23<sup>rd</sup> of September, 1943, in the town of Alexandria, Ukraine.

After leaving school, he entered Technological Institute, Physics-Chemical Faculty, S. Petersburg, then he continued study and in 1966 has graduated from Chemical Faculty of Military-Naval Fleet of the Soviet Union, Baku, as an engineer-dosimetrist.

During 1966-1969 he worked as an officer-dosimetrist, Military-Naval Fleet of the Soviet Union.

During 1977-1979 Dr. G. Zakharchenko was a specialist on Patent Business, Patentologic Institute, Kishinyov.

Since 1970 till his death Dr. G. Zakharchenko has been working in Department of Radiotherapy of Moldova Oncological Institute, Kishinyov. He began as a junior research scientist and achieved a high post of leading specialist - President of Laboratory of Clinical Dosimetry.

His great professional activity proved in the 90-ties. In November, 1991, he gave a thorough report at the First Conference of Association of Medical Physicists in Russia. In March, 1992, he was suggested to create Moldovan Association of Medical Physicists and join the Medical Physicists Association of independent states on the territory of the former USSR.

In June, 1992, General Secretary Colin G. Orton informed about preliminary joining of Moldovan Association of Medical Physicists (MAMP) in International Organization for Medical Physics.

During 1992-1994 Dr. G. Zakharchenko carried out the great scientific work on elaboration and introduction of new methodic of optimization of planing and realization External statical Beam Gamma-therapy.

Since August, 1994, MAMP has been a member of IOMP. At the same time Dr. G. Zakharchenko participated in the work of the World Congress on Medical Physics and Biomedical Engineering in Rio de Janeiro, where he presented the talk "Programmed changing of sensitive structure of material medium and external beam therapy".

During 1991-1998 he published more than 20 scientific work both in co-authorship and on his own. Dr. G. Zakharchenko did his great bit in the development of radiotherapy.

In 1997 on initiative of professor Colin G. Orton his technology was presented to the research officers of Gershenson Radiation Oncology Center, Harper Hospital, Detroit Medical Center (USA) and this report was appreciated at its true value by audience.

His professional and human qualities gave him possibility to collaborate with his colleagues from different countries of the world. With the assistance of John Elliton director of scientific and methodical safety center of California State University, and Catherine Varmelinc, supervisor of IOMP library programs the scientific library on problems of medical physics, technology and radiology has been selected and opened in Moldova Oncological Institute.

Dr. G. Zakharchenko has done especially great bit in the creation of MAMP (he was the first president of MAMP) and

## Science Committee's Report

The IOMP Science Committee completed two major tasks in 1999. The first of these involves completion of the Charge and Methods of the Committee which are now posted on the IOMP home page and reproduced below for the reader's convenience. The second task was the completion of three regional programs for the year.

### Charge to the Science Committee

The charge to the IOMP Science Committee is to improve medical physics worldwide by providing systematized knowledge derived from observation, study and experimentation. The Committee promotes research to determine the nature or principles of physics in medicine and put such information in a useful form for all countries but especially in developing countries.

### Methods

1. The Science Committee will consist primarily of past and future World Congress Scientific Program Chairmen as well as one representative each from all Regional Organization members of the IOMP.
2. The Committee will identify the need for international scientific symposia, research meetings, regional meetings and/or research workshops and will assist with the organization, funding and arrangements of these ventures.
3. The Committee will assist Regional and/or National Organizations of Medical Physics to prepare sponsorship proposals for such "research" meetings for off-ical presentation to the IOMP Executive Committee.
4. The Committee will provide prioritized recommendations for sponsorship to the IOMP Executive Committee to best achieve the charge to the Science Committee within the budget limitations of the IOMP.
5. The Committee will work on any and all alternative mechanisms that will promote international cooperation in addressing the science needs of medical physics.

### Programs for 1999

Three Regional Science meetings were sponsored in the Baltic, Mediterranean and Asian regions. The Nordic-Baltic

*(continued on page 20)*

development of relations with other World and European associations on medical physics.

Being a member of IOMP, European Federation of Medical Physicists, Association of Medical Physicists of Russia, American Association of Physicists in Medicine, he made certain of the fact that in many countries of the world the profession of medical physicists has been generally recognized and now occupies a prominent position in public health.

Dr. G. Zakharchenko did his best for recognition of this specialty in the Republic of Moldova.

In memory of the officials of Moldova Oncological Institute, his colleagues and friends will remain as scientist of wide interests, hard-working and organized man.

All of us were deeply grieved to hear of his sudden death. His death means the greatest loss for us and our Institute.

We hold the memory of Dr. Zakharchenko in deep respect. May his memory live for ever!

*A. Levintsa,  
Head of Radiation Protection Laboratory of Oncology Institute of  
Moldova, President MAMP*

# Are X-Rays Safe?

## In this article, the following topics are discussed:

- Explaining radiation dose to a patient using the BERT concept
- Radiologists should help educate patients about background radiation
- Radiographers should be trained to answer patients questions in terms of BERT
- Scientific quantities for radiation protection
- Entrance skin dose (ESD) is not a good indicator of the dose to the patient
- Fluoroscopic radiation should be measured with a dose-area product (DAP) meter
- There is no risk from normal diagnostic x-ray doses
- A-bomb survivors are living longer on the average than unexposed Japanese
- Nuclear shipyard workers were much healthier than non-nuclear shipyard
- Areas with high natural background have less cancer
- Radon in mines increases lung cancer; radon in homes reduces lung cancer
- Summary and recommendations
- References

An occasional patient will ask: “Are x-rays safe?” Others will ask about the amount of radiation. As a radiation worker you have a responsibility to give a reasonably honest and understandable answer to the patient. You can certainly explain that diagnostic x-rays are safe. There are no data to indicate otherwise. There is evidence that suggest low doses may actually reduce the chance of cancer<sup>1</sup>. The question about amount is difficult to answer in an understandable way. First, because it is a rare x-ray unit that has a meter to measure the radiation to the patient and second, because scientific units for radiation dose are not understood. This article is to help you explain radiation to patients in words that they understand. In addition, I present evidence from various human studies to show that low level radiation, comparable to that from a radiograph, may be beneficial and even reduce cancer.

## Explaining radiation dose to a patient using the BERT concept

Answering your patient’s question about the amount of radiation would be easy if you knew the effective dose. However, it is unlikely the patient would be satisfied if your answer was “the mammogram will give you an effective dose of about 1 millisievert (MSV).” She probably would understand if you converted the effective dose into the amount of time it would take her to accumulate the same effective dose from background radiation. Since the average background rate in the U.S. is about 3 mSv per year, the answer in this case would be about four months. It is likely that she would understand and be satisfied with your answer.

This method of explaining radiation is called Background Equivalent Radiation Time or BERT<sup>2,3</sup>. The idea is to convert the effective dose from the exposure to the time in days, weeks, months or years to obtain the same effective dose from background. This method has also been recommended by the U.S. National Council for Radiation Protection and Measurement (NCRP)<sup>4</sup>. To calculate BERT, I recommend using the average background in the U. S. including contributions to the lung from radon progeny. This is assumed to be 3 mSv/y (300 mrem/y). The background in different parts of the U. S. varies about  $\pm$  50% from this value. This uncertainty is unimportant for explaining radiation to patients. The effective dose from common diagnostic x-ray

procedures are typically less than the amount of radiation you receive from nature in two years. (See Table 1) Giving the answer in terms of background radiation has three advantages:

1. It does not imply any risk—it is just a comparison
2. It emphasizes that radiation is natural
3. The answer is understandable to the patient

## Radiologists should help educate patients about background radiation

It is natural that some patients will confuse x-rays with radiation from radioactivity. They may mistakenly think that man-made radiation is more dangerous than an equal amount of natural radiation. Most patients are unaware that most of their background radiation comes from radioactivity in their own body. Radiation workers should explain to them that we are all radioactive. A typical adult has over 9,000 radioactive disintegrations in their body each second—over a half million per minute. The resulting radiation strikes billions of our cells each hour. The idea that radiation to one cell can initiate cancer is illogical—it assumes that the body has no defense or repair mechanisms. The body has several defense mechanisms to protect itself from doses up to about 200 mGy<sup>1</sup>.

## Typical Effective Doses and Bert Values For Some Common X-Ray Studies To An Adult

(Adapted From *Ipsm Report (-53-5)*)

X-ray Study	Effective Dose (mSv)	BERT (time to get same dose from nature)
Dental, intra-oral	0.06	1 week
Chest x-ray	0.08	10 days
Thoracic spine	1.5	6 months
Lumbar spine	3	1 year
Upper GI series	4.5	1.5 years
Lower GI series	6	2 years

## Radiographers should be trained to answer patients questions in terms of BERT

Most patients never get to see the radiologist. Questions about radiation are often asked of the radiographer. Radiographers are generally not prepared to answer a patient’s question about radiation dose. However, if tables of effective dose and BERT are available at each x-ray unit, any radiographer can answer the patient’s question about radiation dose. If the patient desires further information the radiographer should recommend a basic book, such as *Understanding Radiation*<sup>6</sup>.

## Scientific quantities for radiation protection

There are two scientific quantities for radiation protection: equivalent dose and effective dose. Neither of these quantities can be directly measured. Effective dose, E was defined by the International Commission for Radiological Protection (ICRP<sup>7</sup>) and adopted by the U.S. National Council for Radiation Protection and Measurement (NCRP<sup>8</sup>). The concept of effective dose is appealing but unattainable - E was intended to equate the relative risk of inducing a fatal cancer from a partial body dose (such as radon progeny in the lungs) to the whole body dose that would have the same the risk of inducing a fatal cancer.

The effective dose cannot be measured and it is difficult to calculate<sup>9</sup>. Physicists use computer simulation programs to estimate the organ doses in a standard patient from typical exposure conditions for various projections. The results of these simula-

tions can be used to estimate E for various patient exposures. Once a table of effective doses is constructed for a particular x-ray unit, it is a simple matter to calculate the BERT - the time to get the same effective dose from background. Typical effective doses and BERT values for some common x-ray projections are given in Table I.

### **Entrance skin dose (ESD) is not a good indicator of the dose to the patient**

Effective dose should not be confused with the entrance skin dose (ESD), which was commonly used for describing patient radiation up until about 20 years ago. The ESD is easy to measure, but it is not a good measure for the amount of radiation to the patient. For example, the ESD for a dental intra-oral x-ray (e.g., a bitewing) is about fifty times greater than the ESD for a chest radiograph, yet the effective dose from the dental exposure is usually lower than from a chest radiograph.

### **Fluoroscopic radiation should be measured with a dose-area product (DAP) meter**

During fluoroscopy the beam size, the organs exposed and the dose rate change. This makes it impractical to determine the effective dose. However, the fluoroscopic dose is very easy to measure with a transmission ion chamber covering the exit of the collimator. All of the radiation striking the patient must pass through the ion chamber. The ion current collected is a measure of the exposure-area product (EAP). The reading can easily be converted to the dose-area product (DAP). A meter for this purpose has been available for more than 30 years. Fluoroscopic procedures typically give larger doses to the patient than a roentgenogram. The reading from a DAP-meter is approximately proportional to the energy deposited in the patient - the imparted energy. If the kVp and HVL are known the DAP meter reading in Gy-m<sup>2</sup> can be converted to the imparted energy in joules (J) deposited in the patient<sup>5</sup>. DAP meters, or their predecessor, exposure-area product meters, are little known or used in the U.S. In the UK and Germany they are required on all medical fluoroscopes. I think the NCRP should recommend that all medical fluoroscopes should include such an instrument and that fluoroscopes used for interventional radiology must have such a meter.

### **There is no risk from normal diagnostic x-ray doses**

To reassure the patient about the lack of risk from low doses of radiation it is useful to explain that no studies of radiation to humans have demonstrated an increase in cancer at the doses used in diagnostic radiology. A number of studies described below indicate that low to moderate doses may improve the health and even reduce cancer.

### **A-bomb survivors are living longer on the average than unexposed Japanese**

A-bomb survivors who had large doses - greater than the equivalent of 150 years of background - had a slight increase in cancer. In the last 50 years there was an average of fewer than 10 radiation induced cancer deaths per year in about 100,000 A-bomb survivors. A-bomb survivors who received a dose less than the equivalent of 60 years of background showed no increase in the incidence of cancer. Survivors in that dose range tended to be healthier than the unexposed Japanese. That is, their death from all causes was lower than for the unexposed Japanese. The improved health of those with low doses more than compensated for the radiation induced cancer deaths so that A-bomb survivors as a group are living longer on the average than the unexposed Japanese controls.

### **Nuclear shipyard workers were much healthier than non-nuclear shipyard workers**

Evidence for health benefits from low dose rate radiation comes from the nuclear shipyard workers study (NSWS) a decade ago<sup>10</sup>. This Department of Energy (DOE) sponsored study found that 29,000 nuclear shipyard workers with the highest cumulative doses had slightly less cancer than 33,000 job matched and age matched controls. The decreased cancer among nuclear workers was not statistically significant. However, the low death rate from all causes for the nuclear workers was statistically very significant. Nuclear workers had a death rate 24% (16 standard deviations) lower than the unexposed control group. If the nuclear workers had a death rate 24% higher than the controls, it would have made the world news in 1988.

### **Areas with high natural background have less cancer**

Humans receive ionizing radiation from several natural sources - radioactivity inside their body, radioactivity outside their body and cosmic rays. The amount of radiation from these various sources varies with the geographical location and the material used in the buildings where you work and live. In addition, the contribution from radon varies depending on the construction of your home and the amount of uranium in the soil beneath it.

If ionizing radiation is a significant cause of cancer we would expect the millions of people who live in areas with high natural levels of radiation to have more cancer. However, that is not the case. The seven western U.S. states with the highest background radiation - about twice the average for the country (excluding radon contributions) - have 15% lower cancer death rate than the average for the country<sup>11</sup>.

### **Radon in mines increases lung cancer; radon in homes reduces lung cancer**

Uranium miners had a higher incidence of lung cancer from the high concentrations of radon in underground mines. This was the basis for the Environmental Protection Agency (EPA) to estimate that high levels of radon in homes cause thousands of lung cancer deaths each year in the U.S. However, a study of lung cancer death rates in 1600 U.S. counties representing over 90% of the U.S. population shows that counties with the highest radon levels (> 5 pCi/l) have 40% lower lung cancer death rates than the counties with lowest radon levels (< 0.05 pCi/l<sup>12</sup>). It appears that radiation from radon progeny actually prevents some cancers caused by smoking!

### **Summary and recommendations**

Radiologists contribute most of the man-made radiation to the public. The benefits of this radiation are tremendous. There are no data to suggest a risk from such low doses. Radiologists have a responsibility to help educate their patients and others who ask them about radiation. You have a choice. You can increase the patient's fear of radiation by explaining the "official" policy of the NCRP and the American College of Radiology that even the smallest amount of radiation may cause cancer. Based on this assumption, a recent ACR publication<sup>13</sup> shows that the risk of inducing a fatal cancer from a chest x-ray is ten times greater than the risk of dying in a commercial airline flight. The same table shows that a CT scan of the kidneys has a greater risk of inducing a fatal cancer than a cigarette smoker has of dying from lung cancer.

I strongly recommend that each clinical x-ray unit have a table of the effective dose for various projections and patient size. A separate column should give the BERT - the time to obtain the

*(continued on page 20)*

## Are X-Rays Safe?

(continued from page 19)

same effective dose from background. The radiographers should be taught how to answer the patient's questions using the BERT method. The BERT concept does not suggest any risk and is understandable to the patient.

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## Science Committee's Report

(continued from page 17)

Conference in Tallin, Estonia (6-10, June 1999) had letters of support from National IOMP Organizations from Estonia, Sweden and Finland. The Patras99 meeting in Patras, Greece (1-4, September 1999) had letters of support from EFOMP Regional Organization and the Greek national member. The Asian meeting in Guanzhou, China had letters of sponsorship from five National members Malaysia, Thailand, Indonesia, Australia and New Zealand. All three meeting achieved design goals with 250 to 500 attendees working on regional science problems. Details of reports are available on the IOMP web page.

### Plans for 2000

The Science committee is submitting budget plans for three regional science meetings in the year 2000 in addition to the World Congress in Chicago. Applications for these meetings are being accepted now and no decisions have yet been made. All national and regional organization members are encouraged to work towards submitting regional science programs of exceptional importance to their members.

*Gary D. Fullerton, Ph.D.  
Chair, IOMP Science Committee*

## Donation of Used Equipment— A PRC Report

During the last six months the Professional Relations Committee (PRC) was not able to ship any equipment due to mismatch, non-availability of shipping expenses, and changes in the developing world. A couple of matching is underway and we might be able to ship some equipment in the very near future.

### Used Equipment Needed:

Co-60 machine, Linear Accelerator, CT simulator, Patient dose monitor (Veridose, Nuclear Associates), QA kits for Co-60 and Brachytherapy, Radiation Field Analyzer, Rectal Monitor, Cavity Chamber, Gamma Camera operating in a Spect mode, Treatment planning computers.

### Used Equipment Available:

1. Siemens Mevatron; 2. Treatment Planning Computers: ROCS, Theratron 300 and 400. The equipment mentioned above are in good working condition. The equipment will be donated to educational institutes, medical schools and nonprofit organizations located in the developing countries. This equipment donated by IOMP cannot be sold for profit. The recipient has to pay for shipping and handling. The donation of used equipment is tax deductible.

For more information, please contact Mohammed K. Zaidi at 208-526-2132, fax 208526-2548, or e-mail zaidimk@id.doe.gov

## Report from the Education and Training Committee (ETC)

Education and Training Committee helped to conduct two majors educational activities in radiation therapy physics in June 1999; one in S. Paulo, Brazil and one in Cluj, Romania. Both of these programs were cosponsored by the International Scientific Exchange Program (ISEP) of the American Association of Physicists in Medicine (AAPM). The Brazil program was **endorsed (but not sponsored)** by IOMP since the Medical Society of Brazil failed to renew its IOMP membership status for 1999, however, the program in **Romania was cosponsored** and financially supported (\$1500) by IOMP. Details of these programs are reported elsewhere on page 8 of this issue.

*Azam Niroomand-Rad, PhD, Chair, ETC*

## Report of the Professional Relations Committee (PRC)

Two activities of the PRC are currently in progress.

1. **Status of Medical Physicist Certification.** As mentioned in the June issue of MPW the PRC is trying to establish a database on the status of Medical Physicist certification in the IOMP member states. A questionnaire in this regard was sent to an official of each country. Unfortunately the response was very poor and only 12 of the 69 member states supplied the needed information. These countries are Austria, Chile, Denmark, France, Nepal, New Zealand, Norway, Pakistan, Russia, South Africa, Tanzania and Turkey. Once again an urgent appeal is made to the officials of the countries that have not yet responded to send their replies as soon as possible to the chair of the PRC. It is the intention of the PRC to have this information available at the World Congress meeting in Chicago next year.
2. **Equipment exchange program.** The equipment exchange program is still active and a separate report on this activity can be found on this page.

*Andries van Aswegen, Ph.D., Chair, PRC*

# 11th Nordic-Baltic Conference on Biomedical Engineering

6-10 June ,1999, Tallinn, Estonia

## 1. ORGANIZATION

The Conference was arranged by the *Biomedical Engineering Centre, Tallin Technical University* and the *Estonian Society for Biomedical Engineering and Medical Physics (ESBE and MO)* in cooperation with ESEM (European Society for Engineering and Medicine) and ISBEM (International Society for Bioelectromagnetism), and was held together with the Regional meeting of IFMBE international Federation for Medical and Biological Engineering), IEEE EMBS (IEEE/Engineering in Medicine and Biology Society). Several institutions and companies both in Estonia and outside this country supported the Conference financially. The President of the Conference was Professor Hiie Hinrikus, President of the ESBE and MP.

Over 200 participants coming from 32 countries took part in the Conference.

## 2. PROGRAMME

During the Conference, four plenary sessions ~ 20 ordinary sessions, three round table discussions and four mini-symposiums were held on the following subjects: (1) Medical technology assessment and QA, (2) Biomechanics, (3) Lasers in medicine, Nonlinear dynamics and modelling, (4) Nonlinear dynamics and signal processing, (5) Bioelectromagnetic Phenomena, (6) Biomedical Engineering Education, (7) Instrumentation, (8) Physiological Signal processing, (9) Radiotherapy, (10) Biophysics' (11) Electromagnetic phenomena, (12) Biosensors, (13) Effects of fields and Radiation, (14) Medical Physics Education, (15) Rehabilitation, (16) Biomaterials, and (17) Ultrasound. All these subjects covered a very wide area of biomedical engineering and medical physics, which was of particular interest to and importance for the emerging countries with a relatively short tradition in scientific and engineering applications to medicine. The Proceedings of the Conference have been published as Supplement 1 to volume 37, 1999, of "Medical & Biological Engineering and Computing" journal of the International Federation for Medical & Biological Engineering, and copies of the journal were offered to the participants free of charge.

Table 1 on second column of this page provides a list of countries, papers and participants according to the official programme. The list gives the total number of names of authors who have contributed to several papers, so that this number is not equal to the number of participants present at the Conference. It is clear that, since the Conference was named "Nordic-Baltic Conference", the largest number of papers came from Finland, Estonia (host country), Latvia, Lithuania, Sweden and Poland. It should also be noted that 23 papers constituted a collaborative effort of researchers: countries like Estonia, Lithuania, Latvia, Russia, Ukraine, Bulgaria, Slovenia Croatia and Poland collaborated with industrialized countries such as Denmark, Sweden, Norway, Italy, and the United Kingdom. This is a very sound tendency that should be strongly supported by the international medical physics and biomedical engineering organizations such as IOMP or IFMBE.

The discussions on papers presented were very lively and constructive. All the speakers showed great discipline and therefore the Conference proceeded strictly according to the time table.

Excellent organization of the Conference, due to the indefatigable efforts of Professor Hinrikus and her coworkers, may serve as an example for any future events of this type.

*Oskar A. Chomicki,  
Vice-President, IOMP*

COUNTRY	# OF PAPERS PRESENTED	# OF AUTHORS (MAY OCCUR SEVERAL TIMES)
Australia	2	13
Austria	4	8
Belgium	4	12
Brazil	1	4
Bulgaria	2	24
Canada	1	1
Croatia	5	18
Denmark	4	12
Estonia	28	80
Finland	32	156
France	2	2
Germany	5	23
Greece	4	15
Iceland	2	3
India	1	3
Italy	13	52
Japan	5	19
Latvia	18	42
Lithuania	18	41
Norway	6	14
Poland	16	48
Portugal	1	2
Rommania	1	1
Russia	6	12
Slovana	4	16
Spain	3	16
Sweden	18	36
The Netherlands	3	6
Turkey	1	2
UK	9	23
Ukraine	7	17
USA	7	8

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# **IOMP Solicits Nominations for Marie Sklodowska- Curie Award for 2000**

The IOMP Officers and the ad hoc Awards and Honors Committee are pleased to announce the establishment of a new IOMP award: the **Marie Sklodowska-Curie Award**. The Marie Sklodowska-Curie Award is established to honor scientists who have distinguished themselves by their contributions in:

- 1) the education and training of medical physicists, medical students, medical residents, and allied health personnel; and/or
- 2) the advancement of medical physics knowledge based upon independent original research and/or development; and/or
- 3) the advancement of the medical physics profession in the IOMP adhering national and international organizations.

The Awards and Honors Committee requests nominations from the Chairs of IOMP Committees and the Presidents of IOMP adhering national organizations for the 1<sup>st</sup> Marie Sklodowska-Curie Award to be presented at the Chicago World Congress. Please send nominations to Azam Niroomand-Rad, Ph.D., member of Awards and Honors Committee (address on page 2). The deadline for receipt of nominations is January 31<sup>st</sup>, 2000.

*Colin G. Orton, Ph.D.,  
President*

**REACTOR QUARTER  
PAGE**

**STANDARD ONE OF TWO HALF PAGES  
(5&19)**